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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/795,903	03/08/2004	Wolfgang Eberhard Luxem	81739/LPK	1548

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EXAMINER	
ROSENBERGER, FREDERICK F	

ART UNIT	PAPER NUMBER
2884	

DATE MAILED: 11/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/795,903	LUXEM ET AL.	
	Examiner	Art Unit	
	Frederick F. Rosenberger	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: There is no mention of a chronometer in the specification, per the limitations of claim 9. Further, there is no mention of a luminescence diode as the light source in the specification, per the limitations of claim 11.

Claim Objections

4. Claims 1, 2, 6, and 12 are objected to because of the following informalities:

In claim 1, line 3, "the fluoresced ray" lacks proper antecedent basis in the claim.

In claim 2, line 4, "fluorescing optical receiver" should probably be --the optical receiver-- for proper antecedence with claim 1.

In claim 6, line 3, a comma should be included after "light".

In claim 12, line 1-2, "said tilting mirror" lacks antecedent basis in claim 6.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 2-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

For example, in claim 2, lines 4-8 are unclear. In claim 3, line 4, the phrase "tilt angle is assigned to a position of the edge of the object" is unclear. In claim 4, lines 3-

4, the phrase "the tilt angle is allocated to the position of one edge of object" is unclear. In claim 6, lines 3-5 are unclear. The remaining claims are rejected as being dependent upon the claims 2-4 or 6.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Alt et al. (US Patent # 6,348,696).

Alt et al. disclose a method for detecting the edge of a moving material web comprising directing rays of light **5** (Figure 1) from a source **4** towards an optical receiver **10**, wherein a plastic panel **15** is embedded with a fluorescent dye which is excited by the incident rays **5** and the excited fluorescence is guided to photodiodes **12** for detection, and moving of the web **2** between the source **4** and the receiver **10** to block the light path.

Alt et al. further disclose a sensor device for detecting the edge of a moving material web comprising a light source **4** (Figure 1) for emitting a ray of light **5**, an optical receiver **10** for receiving the emitted light, wherein the optical receiver includes a fluorescing plastic panel **15** which fluoresces in response to excitation by light emitted

from the source **4**, whereby an object **2** can be situated between the source and the receiver.

9. Claims 6 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Okuyama et al. (US Patent # 5,070,237).

Okuyama et al. disclose a sensor device for detecting an object **7** comprising a light source **1** (Figure 1) for emitting a ray of light, an optical receiver **31** for receiving the emitted light, wherein the optical receiver is a fluorescent optical fiber **31** which fluoresces in response to excitation by light emitted from the source **1**, whereby an object **7** can be situated between the source and the receiver. With regards to claim 10, Okuyama et al. further disclose that the light source can take the form of a semiconductor laser (column 1, lines 12-16), which is another term for laser diode.

10. Claims 1, 6, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Magonette (European Patent Application Publication # EP-1267143-A1).

Magonette discloses a method for detecting the position of an object comprising directing a ray of light **112** (Figure 2) from a source **111** towards an optical receiver **102**, wherein a scintillating fiber **102** is excited by the incident rays **112** and the excited fluorescence is guided to photodiodes **131**, **132** for detection, and moving of the object **101** between the source **111** and the receiver **102** to block the light path (paragraph 32).

Magonette further discloses a sensor device for detecting the edge of a moving material web comprising a light source **111** (Figure 2) for emitting a ray of light **112**, an

optical receiver **102** for receiving the emitted light, wherein the optical receiver is a scintillating optical fiber **102** which fluoresces in response to excitation by light emitted from the source **111**, whereby an object **101** can be situated between the source and the receiver. With regards to claim 10, Magonette further discloses that the light source can take the form of a laser diode (paragraph 28).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 7-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okuyama et al., as applied to claim 6 above.

With regards to claim 7, applicant recites that the fluorescing device is a fluorescing rod. As the solid fluorescing material of the fluorescent optical fiber **31** is a continuous circular material with fluorescent properties, it can be considered a fluorescent rod.

With regards to claim 8-9, Okuyama et al. discloses a control device, illustrated schematically in Figure 3, which enables correlation of the measured time, through clock generating circuit **14**, to an angle of the incident light ray to determine the position of the object **7**.

With regards to claim 11, it is well known in the art that an LED or luminescent diode may be substituted for laser diodes in applications where narrow bandwidths are not necessary, to take advantage of the lower relative cost of LED devices.

14. Claims 2-4, 7-9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magonette, as applied to claims 1 and 6 above.

With regards to claims 2-4, Magonette further discloses the steps of directing the ray **112** from a light source **111** to a rotating polygonal mirror **110**, which is functionally equivalent to a tilting mirror, reflecting the light from the mirror at controlled angles towards the fluorescent optical fiber **102**, and detecting the location of the object **101** based on the angle at which the ray of light is intercepted. In this case, the angle is experimentally correlated with the time. Magonette correlates the angle of the mirror

with a specific time referenced to the start of the scan at the bottom of the fiber at photodetector Okuyama et al. further disclose the steps of directing the ray from a light source **1** to a rotating polygonal mirror **2**, which is functionally equivalent to a tilting mirror, reflecting the light from the mirror at controlled angles towards the fluorescent optical fiber **31**, and detecting the location of the object based on the angle at which the ray of light is intercepted. In this case, the angle is experimentally correlated with the time **122** to the time of interception to determine the location of the object using equation (2) on page 5.

Although Magonette uses the timing of the scan to determine angle and location, it would have been just as obvious to monitor the drivers of the mirror itself via the voltage applied to the driver to monitor the angle as both result in the same monitoring of the angle of the incident ray for position determination. Further, it would have been obvious for one of ordinary skill in the art at the time the invention was made to use the voltage of the mirror drive to determine the angle since this would negate the need for additional photodetectors **121** and **122** to determine the start and stop times for position determination.

With regards to claim 7, applicant recites that the fluorescing device is a fluorescing rod. As the solid fluorescing material **103** of the scintillating fiber **102** is a continuous circular material with fluorescent properties, it can be considered a fluorescent rod.

With regards to claim 8-9, Magonette discloses a control device, illustrated schematically in Figure 4, which enables correlation of the measured time to an angle of the mirror and the incident light ray to determine the position of the object **101**.

With regards to claim 11, it is well known in the art that an LED or luminescent diode may be substituted for laser diodes in applications where narrow bandwidths are not necessary, to take advantage of the lower relative cost of LED devices.

15. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Magonette, as applied to claim 4 above, and further in view of Luxem et al. (US Patent # 6,521,905).

Magonette is silent with regards to the use of polarized light incident on a transparent object at an acute angle so as to allow detection by the optical receiver.

Luxem et al. teach that by using polarized light directed at an acute angle towards a transparent object, the object can be detected with high accuracy (column 1, lines 45-52; column 2, lines 26-31).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Magonette to use polarized light directed at an acute angle so as to allow detecting of previously undetectable transparent objects with high accuracy, as taught by Luxem et al.

16. Claims 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Magonette, as applied to claim 6 above, and further in view of Hagelin et al. (US Patent # 6,246,504).

Magonette is silent with regards to the mirror containing a micro-mirror.

Hagelin et al. teach that scanning micro-mirrors are replacing traditional macroscale scanning mirrors because of numerous advantages micro-mirrors have, including smaller size and mass, reduced power consumption, and greater integration with optical elements (column 1, lines 24-29).

Thus, it would have been obvious for a person having ordinary skill in the art at the time the invention was made to modify Magonette to use micro-mirrors instead of macro-mirrors to take advantage of the smaller size and mass, reduced power consumption, and greater optical integration, as taught by Hagelin et al.

17. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okuyama et al., as applied to claim 6 above, and further in view of Hagelin et al. (US Patent # 6,246,504).

Okuyama et al. are silent with regards to the mirror containing a micro-mirror.

Hagelin et al. teach that scanning micro-mirrors are replacing traditional macroscale scanning mirrors because of numerous advantages micro-mirrors have, including smaller size and mass, reduced power consumption, and greater integration with optical elements (column 1, lines 24-29).

Thus, it would have been obvious for a person having ordinary skill in the art at the time the invention was made to modify Okuyama et al. to use micro-mirrors instead of macro-mirrors to take advantage of the smaller size and mass, reduced power consumption, and greater optical integration, as taught by Hagelin et al.

Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frederick F. Rosenberger whose telephone number is 571-272-6107. The examiner can normally be reached on Monday-Friday 8:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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